

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
6 January 2005 (06.01.2005)

PCT

(10) International Publication Number
WO 2005/001083 A1

- (51) International Patent Classification⁷: C12N 9/02, A61K 38/43
- (21) International Application Number: PCT/EP2004/006474
- (22) International Filing Date: 16 June 2004 (16.06.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
03014688.0 27 June 2003 (27.06.2003) EP
04004818.3 2 March 2004 (02.03.2004) EP
- (71) Applicant (for all designated States except US): BAYER HEALTHCARE AG [DE/DE]; 51368 Leverkusen (DE).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): WATANABE, Shinichi [JP/JP]; 6-3-504 Jingu, Nara-shi, Nara 631-0804 (JP). ENCINAS, Jeffrey [US/JP]; 464-1-1401 Toroyama-cho, Nishikikoji-sagaru Nishinotoin-dori, Nakagyo-ku, Kyoto 604-8225 (JP). KONDO, Shinichi [JP/JP]; 3-6-1-001 Sakyo, Nara-shi, Nara 631-0801 (JP). BACON, Kevin [GB/JP]; 5-15-912 Koyo-cho, Naka, Higashinada-ku, Kobe-shi, Hyogo 658-0032 (JP).
- (74) Common Representative: BAYER HEALTHCARE AG; Law and Patents, Patents and Licensing, 51368 Leverkusen (DE).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: REGULATION OF KINASE, 'REGULATED IN COPD KINASE' (RC KINASE)

(57) Abstract: Reagents which regulate human RC Kinase activity and reagents which bind to human RC Kinase gene products can be used to regulate this protein for therapeutic effects. Such regulation is particularly useful for treating chronic obstructive pulmonary disease, asthma, cancer, and diseases in which cell signaling is defective.



WO 2005/001083 A1

THIS PAGE BLANK (USPTO)

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N9/02 A61K38/43

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, Sequence Search, EMBL, PAJ, WPI Data, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | WO 02/33099 A (WALIA NARINDER K; GURURAJAN RAJAGOPAL ; INCYTE GENOMICS INC (US); BAUG) 25 April 2002 (2002-04-25) page 64, line 9 - line 10; sequence 6 | 1-26 |
| X | US 2003/054529 A1 (YAN CHUNHUA ET AL) 20 March 2003 (2003-03-20) figures 2a,3 ----- -/-- | 1-26 |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

8 November 2004

Date of mailing of the international search report

23/11/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Schmitz, T

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|--|---|-----------------------|
| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| P, X | <p>DATABASE EMBL 'Online! 9 September 2003 (2003-09-09), "Homo sapiens cDNA FLJ16628 fis, clone TESTI4017763, moderately similar to Mitogen-activated protein kinase kinase kinase 3 (EC 2.7.1.-)." XP002304384 retrieved from EBI accession no. EM_PRO:AK122935 Database accession no. AK122935 the whole document</p> | 1-26 |
| A | <p>DATABASE EMBL 'Online! 14 December 1999 (1999-12-14), "Homo sapiens BAC clone RP11-341H1 from 2, complete sequence." XP002304385 retrieved from EBI accession no. EM_PRO:AC016725 Database accession no. AC016725 abstract</p> | |
| A | <p>WO 03/018786 A (BAYER AG ; LIOU JIING-REN (US)) 6 March 2003 (2003-03-06) page 53, line 19 - line 21</p> | |
| A | <p>RAHMAN IRFAN: "Oxidative stress and gene transcription in asthma and Chronic Obstructive Pulmonary Disease: Antioxidant therapeutic targets." CURRENT DRUG TARGETS - INFLAMMATION AND ALLERGY, vol. 1, no. 3, September 2002 (2002-09), pages 291-315, XP008038264 ISSN: 1568-010X figures 4,5 page 302, right-hand column, last paragraph - page 303, left-hand column, paragraph 2</p> | |
| A | <p>PUCHELLE E ET AL: "Chronic obstructive pulmonary disease: an old disease with novel concepts and drug strategies" TRENDS IN PHARMACOLOGICAL SCIENCES, ELSEVIER TRENDS JOURNAL, CAMBRIDGE, GB, vol. 22, no. 10, 1 October 2001 (2001-10-01), pages 495-497, XP004307600 ISSN: 0165-6147 the whole document</p> | |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 2004/006474

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Although claims 14, 17, 18 are directed to a diagnostic method practised on the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Although claims 19-23 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

| Patent document cited in search report | | Publication date | | Patent family member(s) | | Publication date |
|---|----|---------------------|----|----------------------------|--|---------------------|
| WO 0233099 | A | 25-04-2002 | AU | 2735202 A | | 29-04-2002 |
| | | | CA | 2425963 A1 | | 25-04-2002 |
| | | | EP | 1373517 A2 | | 02-01-2004 |
| | | | WO | 0233099 A2 | | 25-04-2002 |
| <hr/> | | | | | | |
| US 2003054529 | A1 | 20-03-2003 | US | 6582946 B1 | | 24-06-2003 |
| <hr/> | | | | | | |
| WO 03018786 | A | 06-03-2003 | WO | 03018786 A2 | | 06-03-2003 |
| <hr/> | | | | | | |

THIS PAGE BLANK (USPTO)